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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/009,504	03/28/2002	Garry Royston Fish	10541-824	5011
29074	7590	10/28/2004	EXAMINER	
VISTEON C/O BRINKS HOFER GILSON & LIONE PO BOX 10395 CHICAGO, IL 60610			FLANIGAN, ALLEN J	
			ART UNIT	PAPER NUMBER
			3753	

DATE MAILED: 10/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/009,504

Applicant(s)

FISH, GARRY ROYSTON

Examiner

Allen J. Flanigan

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 15-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 15-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-13 and 15-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The wording of the claims as now presented implies that dimples projecting from the tube wall into the tube "promote laminar flow". This is not true, and contradicts the applicant's own disclosure (see comments below, including footnote taken from the specification).

Claims 1-5, 9, 12, 13, 15-17, and 24 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kiser et al.

Please see the comments made in regard to the above rejection in the previous Office action.

Claims 6-8, 10, 18-20, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of Kiser et al. and Rhodes.

Please see the comments made in regard to the above rejection in the previous Office action.

Applicant's arguments filed 7/22/2004 have been fully considered but they are not persuasive.

Based on consideration of the applicant's disclosure and the level of ordinary skill in the art, it is clear that the claimed invention is not novel or

unobvious over Kiser. The description of the function of the dimples provided on the tubes of the applicant's invention, given on page 2 of the specification¹ is clearly a description of turbulent, not laminar, flow. Laminar flow results in the formation of a boundary layer adjacent the tube wall that is at or near the wall temperature, inhibiting heat transfer. This boundary layer remains adjacent the wall unless it is turbulently disrupted towards the center of the tube, away from the wall, by dimples or other turbulence-generating means. What applicant calls "mixing" is, in fact, turbulence, i.e. a disruption of laminar flow to break down the thermal boundary layer and achieve more uniform temperature distribution. What Kiser and applicant are both attempting to do is provide an optimum amount of mixing or turbulence within the tube. Those skilled in the art appreciate that heat exchange is optimized when balance is obtained between mixing and turbulence to enhance convective heat transfer and minimizing pressure drop caused by such turbulent mixing. Kiser acknowledges the need to provide such balance (see, for example, line 64 column 4 to line 11 of column 5), as does applicant (bridging paragraph of pps. 2-3 of the specification).

Even assuming arguendo that applicant's "mixing" is, in fact, a fundamentally different phenomenon from the "turbulence" discussed in Kiser, it is clear that Kiser's tube is inherently capable of meeting the claim language

¹ "Mixing means that coolant which at one moment is in contact with the tube wall moves from that position into the centre of the tube, and vice versa, this process taking place continuously to encourage uniform temperature distribution throughout the coolant."

of "promoting" resumption of laminar flow downstream of the dimples in view of the fact that the structure of Kiser, and the suggested spacings of the dimples, is within the range claimed by applicants. Applicant's disclosure indicates that the claimed resumption of laminar flow is due to appropriate spacing and height of the claimed dimples; since Kiser suggests dimple height and spacing values that correspond to the claimed values, it is reasonable to assume that the tube of Kiser inherently possesses the same balance of turbulence and pressure drop characteristics as the claimed invention. See MPEP 2112 regarding inherency.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen J. Flanigan whose telephone

number is (703) 308-1015. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Scherbel can be reached on (703) 308-1272. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Allen J. Flanigan
Primary Examiner
Art Unit 3753

AJF